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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,025	07/22/2003	Woo Yeong Cho	8836-189 (ID12133-US)	8217

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EXAMINER

NGUYEN, DANG T

ART UNIT	PAPER NUMBER
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2824

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/625,025

Applicant(s)

CHO, WOO YEONG

Examiner

Dang T Nguyen

Art Unit

2824



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-10 and 12-18 is/are rejected.
- 7) ☒ Claim(s) 2 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Search history</u> . |

DETAILED ACTION

1. This action is responsive to the following communications: the Application filed on July 22, 2003.
2. Claims 1 – 18 are pending in this case. Claims 1 and 10 are independent claims.

Claim Objections

3. Claim 18 objected to because of the following informalities: Claim 18 is exactly same with claim 9. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-6, 8-10, 12-15, and 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishikawa, U.S. Pub. No. 2004/0012995 A1 – Priority Date: July 18, 2002.

Regarding independent claims 1 and 10, Fig. 1 of Ishikawa discloses a memory device comprising: a first memory array (Fig. 1 [RMC 11]) having a plurality of first arranged at an intersection of at least one of a plurality of wordlines [WL1.....WLn],

at least one of a plurality of bitlines [BLr....BLm], and at least one of a plurality of digit lines [DL1....DLm];

a second memory array having a plurality of second memory cells (Fig. 1 [next to RMC 11]), wherein each one of the plurality of second memory cells is arranged at an intersection of at least one of the plurality of wordlines [WL1...WLn], at least one of a first bitline [BLr] and a second bitline [BL1] of the plurality of bitlines [BLr....BLm], and at least one of the plurality of digit lines [DL1...DLm];

a current providing unit for providing a second current [Iref] to one of the first bitline and the second bitline in response to a reference voltage; and a sense amplifier [50] for comparing a first current flowing through one of the plurality of bitlines with the second current (page 3, paragraphs [0036] and [0037]).

Regarding dependent claims 3 and 12, Fig. 4 of Ishikawa discloses wherein each one of the plurality of second memory cells set to a first logic state is coupled to the first bitline and each one of the plurality of second memory cells set to a second logic state is coupled to the second bitline (page 6, paragraphs [0090-0091]).

Regarding dependent claims 4 and 13, Ishikawa discloses further comprising a circuit for clamping down a voltage of a first data line through which the first current is transmitted, and a voltage of a second data line through which the second current is transmitted, to the reference voltage when one of the plurality of wordlines of one of the plurality of first memory cells is enabled (page 7 paragraphs [0115-0116]).

Regarding dependent claims 5 and 14, Ishikawa discloses wherein the first memory cells and the second memory cells are magnetic (page 3 paragraph [0045]).

Regarding dependent claims 6 and 15, Ishikawa discloses wherein the first current is a target current (Fig. 1 [I_{cell}], page 2 paragraph [0025] and page 3 paragraph [0038]).

Regarding dependent claims 8 and 17, Ishikawa discloses wherein the second current is a reference current (Fig. 1 [I_{ref}], page 3 paragraphs [0035-0037]).

Regarding dependent claims 9 and 18, Ishikawa discloses wherein the first current is compared to the second current to determine a logic state of a predetermined one of the plurality of first memory cells (Fig. 1, the output of S/A [50]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa, U.S. Pub. No. 2004/0012995 A1 – Priority Date: July 18, 2002 in view of Nahas et al., Patent No. US 6,700,814 – filed: Oct. 30, 2002.

Regarding dependent claims 7 and 16, Ishikawa as applied to claims 1 and 10 above disclosed every aspect of applicant's claimed invention except for wherein the second current is defined by the expression $(I(H) + I(L))/2$.

Fig. 1 of Nahas the current is defined by the expression $(I(H) + I(L))/2$ (Col. 4 lines 10-16).

Ishikawa and Nahas are common subject for MRAM device. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporated Nahas's current expression into Ishikawa's second current for the purpose of establishing a saturated current level for the transistors (Col. 7 lines 30-32).

Allowable Subject Matter

6. Claims 2 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: With regard to claims 2 and 11, the primary reason for indication of allowable subject matter is that the prior art fails to teach or suggest "a first current mirror coupled to the first bitline flows through the first current mirror in response to the reference voltage; a second current mirror coupled to the second bitline, wherein a current from the second bitline flows through the second current mirror in response to the reference voltage; and a third current mirror for providing half of the sum of the current from the first bitline and the current from the second bitline to the sense amplifier".

Prior art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Naji	Patent No.: US 6,445,612 B1	Date of Patent: Sep. 3, 2002
Jeong	Pub. No.: US 2004/0076029 A1	Pub. Date: Apr. 22, 2004
Lee et al.	Pub. No.: US 2003/0179602 A1	Pub. Date: Sep. 25, 2003

Contact Information

8. Any inquiry concerning this communication from the examiner should be directed to Dang Nguyen, who can be reached by telephone at ~~(703) 305-1673~~ ⁵⁷¹⁻²⁷²⁻¹⁹⁵⁵. Normal contact times are M-F, 8:00 AM - 4:30 PM.

Upon an unsuccessful attempt to contact the examiner, the examiner's supervisor, Richard Elms, may be reached at (571) 272-1869.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is (703) 305-3900. The faxed phone number for organization where this application or proceeding is assigned is (703) 872-9306.


Information regarding the Status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

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have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or EBC@uspto.gov.

Dang Nguyen 8/5/2004


RICHARD ELMS
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TECHNOLOGY CENTER 2800